



**Third United Nations
International Conference
on the Peaceful Uses
of Atomic Energy**

A/CONF.28/A/144
UNITED KINGDOM
February 1964
Original: ENGLISH

Confidential until official release during Conference

Abstract

**A RESEARCH PROGRAMME TO INVESTIGATE THE SERVICE PERFORMANCE
OF STEEL REACTOR VESSELS**

- * C.H.A. Townley
- * E. Procter

The paper is concerned with research of an engineering nature in the field of nuclear pressure vessels and primary coolant circuit components. It outlines the problems which are of prime interest to the Central Electricity Generating Board - those concerned with the safety and integrity of the plant throughout its working life. It describes the work so far completed in this direction, and reviews what still needs to be done.

At the present time, it is generally not possible to predict, by calculation, the performance of pressure circuit components in service, especially if creep and other forms of inelastic behaviour are involved. Thus, in the immediate future, the information required must come from tests on actual components and on models, carried out, where necessary, under simulated environmental conditions.

Investigations of this type dealt with in the paper include:-

- (a) Three tests beyond yield on highly stressed components - a duct corner unit, a standpipe nozzle cluster, and an intersection between a support skirt and a spherical shell.
- (b) A creep test on a standpipe nozzle cluster.
- (c) Two cyclic loading tests on a standpipe nozzle cluster and an intersection between a support skirt and a spherical shell.

* Central Electricity Generating Board, Research and Development Department, Berkeley Nuclear Laboratories